

**Senate Committee on Foreign Relations Hearing on
“Increasing Our Nonproliferation Efforts in the Former Soviet Union”
Siegfried S. Hecker
Senior Fellow, Los Alamos National Laboratory
April 23, 2002**

Mr. Chairman, I am honored to share my views about what can be done to increase our nonproliferation efforts in the Former Soviet Union. Many of the questions raised in your letter of invitation are covered in detail in my Summer 2001 *Nonproliferation Review* article on nuclear cooperation with Russia. With your permission, I would like to enter it into the record. In my written statement, that I would also like to enter into the record, I address how the nonproliferation risks have changed since September 11. I will summarize my statement this morning. Specifically, I want to make three points.

First, the risks and vulnerabilities in the Russian nuclear complex remain high. Fortunately, in the ten years that have passed since the dissolution of the Soviet Union, nothing really terrible has happened in the Russian nuclear complex. Most of the credit must go to the Russians, although initial progress made by cooperative programs sponsored by the United States had a significant positive impact. However, many opportunities were missed to build a lasting partnership and to tackle the root causes of the problem.

Second, following the tragic events of 9/11 and President Putin’s decision to ally Russia with the West, we should ask Russia to join with us in a new cooperative effort to reduce the threat of terrorism and proliferation of weapons of mass destruction by improving nuclear security worldwide, and to redouble her own efforts to improve nuclear security within Russia. Today, the nuclear security challenge outside Russia is even more urgent than that within Russia itself. The events of 9/11 and the recent violence in the Middle East have heightened our concerns about nuclear security in South Asia, Central Asia, and the Middle East.

Third, to keep nuclear weapons, their constituent materials, and other dangerous radioactive materials out of the wrong hands worldwide, we should mount an intense, comprehensive international nuclear security initiative with three thrusts: 1) Ensure rigorous security and control of nuclear weapons in each of the five nuclear weapons states, as well as in India, Pakistan, and Israel. 2) Develop and enforce rigorous protection, control, and accounting for all weapons-usable nuclear materials whether designated for peaceful or defense purposes, and 3) Address the threat of radiological terrorism by developing effective security, control, and disposition measures for radioactive materials. Improving security at nuclear facilities to protect against sabotage is an important part of this third thrust.

I. 1991 – 2002: Important progress, but also an opportunity lost.

The attempted coup in August 1991, and the attendant uncertainties about the control of the Soviet nuclear arsenal, underscored a vital concern: how Russia manages and protects her nuclear assets will affect our security and potentially threaten our people and assets around the world. In the years that followed, the threat of “loose nukes” and the “clear and present danger” posed by Russia’s large and poorly secured stock of weapons-usable materials – plutonium and highly enriched uranium (HEU) – emerged as vital national security issues for the United States whose solution required cooperation with Russia.

I had the opportunity to witness the new environment in February 1992 as one of the first Americans to visit the Russian nuclear weapons complex. This visit occurred only two months after the dissolution of the Soviet Union. I was struck by how the Soviet Union’s strength – an enormous nuclear weapons complex, huge number of weapons and weapons-usable materials – had suddenly turned into a liability because Russia could no longer afford them or secure them adequately. In spite of popular reports to the contrary, Russian nuclear weapons appeared to be adequately protected, at least as long as the military organizations responsible for security maintained the high level of discipline that had distinguished them for many years.

The security of nuclear materials, however, was of great concern as Russia made a wrenching transition from a centrally controlled police state to a more open, democratic form of government. During Soviet times, the nuclear complex had an admirable record of nuclear security. Now, however, the upheaval of political, economic, and social structures in Russia created unacceptable nuclear security vulnerabilities in Russia and for the rest of the world. A much more rigorous nuclear safeguards system in which modern technology and practices are combined with personnel and physical security was urgently needed to replace Soviet guns, guards, and gulags.

As we now look back over the last decade, the good news is that nothing really terrible happened in the Russian nuclear complex in spite of the enormous hardship endured by the Russian people. The early years were marked by surprising cooperation between our governments in the nuclear area, through unilateral actions on both sides (most notably, the presidential initiatives in the fall of 1991) and through the initial implementation of the Nunn-Lugar Cooperative Threat Reduction (CTR) program. By the end of 1996, the CTR program helped the newly independent states of Ukraine, Kazakhstan, and Belarus return to Russia the nuclear weapons inherited from the Soviet Union. Much of the strategic missile and nuclear weapons infrastructure in these states was destroyed. Technical assistance was rendered to Russia to protect nuclear weapons in transit. Some vulnerable nuclear materials in Kazakhstan were removed to safety in the United States. Construction of a large modern, safe storage facility for excess Russian fissile materials was begun. And, a landmark agreement led to the conversion of weapons-grade uranium to low enriched uranium (LEU) reactor fuel sold to the U.S. nuclear power market (the so-called HEU/LEU deal).

In parallel, the informal scientific network (lab-to-lab cooperation) established between U.S. and Russian nuclear scientists during our first visit to Russia ten years ago began to tackle problems such as nuclear materials safeguards that were stalled or moving very slowly in formal governmental diplomatic channels. In June 1994, with the strong encouragement of then Under Secretary Charles Curtis, I signed the first contracts for cooperative nuclear materials protection, control, and accounting (MPC&A) with Russian defense and civilian nuclear institutes on behalf of the Department of Energy. In addition to strong backing from Mr. Curtis and others the Executive Branch, a bipartisan coalition in Congress, led by Senator Pete Domenici, provided both political and financial support for the lab-to-lab MPC&A activities. With their support and the remarkable spirit of cooperation based on mutual respect and shared objectives between the U.S. and Russian laboratories, we were able to break the logjam and rapidly accelerate improvements in nuclear safeguards in Russia. Senator Domenici's leadership in building support for the lab-to-lab program also extended into many related threat reduction programs and was instrumental, along with that of Senators Nunn and Lugar, in establishing the comprehensive and wide-ranging cooperative threat reduction programs that have accomplished so much over the last decade.

However, most of the credit for avoiding disaster in the Russian nuclear complex must go to the Russians – most importantly to the loyalty and patriotism of the Russian nuclear workers. Their discipline under conditions of personal hardship was remarkable. We must also credit the leadership of the nuclear complex during and right after the transition, specifically former Minister of Atomic Energy, Viktor N. Mikhailov, and First Deputy Minister, Lev D. Ryabev, as well as the directors of the nuclear institutes and enterprises. Their actions early in the transition managed against difficult odds to sustain the complex through those turbulent times and prevented it from fragmenting into even more dangerous and desperate entities. Also, although their decision to keep the most sensitive defense facilities and towns (so-called nuclear cities) closed undoubtedly had several distinct motivations, in retrospect, it was the right decision from the standpoint of nuclear security. Although this restrictive approach hampered much-needed business development, defense conversion, and downsizing efforts in these cities, it helped protect nuclear materials and nuclear secrets. Civilian nuclear facilities and some defense sites located in open cities generally experienced a more abrupt and difficult transition. In fact, these facilities along with the Russian Navy posed by far the greatest immediate proliferation risk. Several confirmed thefts of nuclear materials, albeit of small quantities, in the early 1990s highlighted the vulnerability of the Russian nuclear complex.

Much of the initial success in the MPC&A program must be credited to the partnership approach between the Department of Energy laboratories and the Russian facilities and to the remarkable access the laboratories had to Russian nuclear facilities. I believe that only a self-declared “hawk” such as Minister V.N. Mikhailov was capable of providing the requisite political cover and he had the clout with Russian security services to enable this progress. In fact, he opened the door for the first American visits to the Russian nuclear weapons laboratories shortly after he led the Russian scientific delegation to the 1988 Joint Verification Experiments and the subsequent nuclear testing talks at Geneva. During the ramp-up of the MPC&A program in the mid-1990s, the U.S.

side was able to make a convincing case to the Russians that the program was in their interest. In spite of the fact that Russian security services took control of the program, progress was rapid because of the strong partnership between U.S. and Russian institutes and the fact that the Russian institutes acted as the intermediaries to some of the key sensitive sites in the Russian complex. For example, the Kurchatov Institute was the lead laboratory for the Russian Navy to help it address some of the most urgent nuclear materials vulnerabilities.

The bad news is that the problems in the Russian nuclear complex were much greater and more pervasive than either Russians or Americans realized ten years ago. The Russian nuclear complex in 1992 was vastly oversized and overstaffed for post-Cold War defense requirements, and had been in difficult economic straits for years. Yet, unlike in the United States, dramatic downsizing of the Russian complex was believed too risky by its government. Such downsizing was painful in the United States, but was ameliorated by significant increases in federal environmental budgets at DOE nuclear sites, an innovative community and worker transition program, and by a healthy U.S. economy. In Russia, on the other hand, the closed cities were embedded in a country with a bankrupt federal government whose governing institutions were collapsing. Laying off workers in the closed cities risked serious social unrest. Opening up the cities for business development posed a major proliferation risk. Consequently, the Russian government chose to proceed with a slow but deliberate conversion-in-place program. Such an effort would have been difficult under conditions of a healthy economy and was extraordinarily difficult for these isolated cities in a chaotic national economy. U.S. programs designed to help the Russian nuclear complex conversion received inadequate support from Congress. Moreover, some of the initial efforts were misguided and elicited strong negative reactions from the Russian side. Some of the problems been rectified during the past year and substantial progress is now being made in some of the programs that experienced difficulties earlier.

Today, serious concerns about security of weapons-usable materials in Russia and the other states of the former Soviet Union remain because progress slowed dramatically in the second half of the 1990s as mistrust replaced cooperation. What went wrong? Why did we miss the chance to help Russia further improve nuclear security in its complex and put our relationship with Russia on firmer ground? I believe that some of our leaders were slow to recognize that we truly were threatened more by Russia's weakness than her strength. Consequently, instead of developing and maintaining an integrated strategy based on such an overriding guiding principle, the executive agencies and Congress independently developed their own projects resulting in a patchwork quilt of programs. Although each may have been useful and justified on its own terms, overall strategic direction was missing and little effective coordination existed, either with Russia or within the U.S. interagency community. Some programs pushed by the U.S. side ran counter to Russia's national security interests or energy strategy, forcing Russia to choose between her national interest and receiving much-needed financial assistance. Moreover, the overall political relationship between our countries was severely strained by NATO expansion, the bombing of Serbia, national missile defense, and disagreements over Iran, Iraq, and Chechnya.

Concurrently, partially to placate a skeptical Congress, executive agencies dramatically changed the execution of key nuclear materials security programs with Russia. They began to take a confrontational line with Russian counterparts, replacing partnership with a unilateral, bureaucratic approach that insisted on intrusive and unnecessary physical access to sensitive Russian facilities in exchange for U.S. financial support. During a trip this March, I was told by one of my Russian colleagues: *“The nuclear materials arena is very sensitive for the Russians. Despite this sensitivity, the American side constantly tried to get access everywhere and to obtain sensitive information. This must have been motivated by various reasons (implying that Russia suspected an intelligence motivation). This American desire for extensive information and access backfired. It caused the strengthening of the security services – back to their previous role and prominence.”* I believe that the Russian bureaucracy and security services made a strong comeback on their own for other reasons, but the change in tactics on the U.S. side made matters worse and accelerated the trend. Furthermore, it eroded the spirit of partnership and nearly depleted the bank account of trust and good will. Consequently, progress in nuclear materials protection in key Russian nuclear defense facilities has slowed substantially in recent years. The jury is still out whether or not the recently signed access agreements will put us back on a more productive path, but we hope they will be a springboard for repairing the damage of the last few years and returning to a pattern of genuine cooperation. Thanks to congressional action, the current funding for the MPC&A program is plentiful. However, we must not make the mistake of trying to buy our way into the Russian facilities. Instead, we must re-examine our common objectives, re-establish the spirit of partnership, and together tackle the remaining challenges in the Russian nuclear complex.

During the past five years, several other cooperative threat reduction programs ran into similar difficulties as U.S. and Russian objectives progressively diverged. The HEU/LEU purchase deal, which initially provided the Russian complex much of the funds for conversion of its facilities, has been on the ropes periodically for several years. The plutonium production reactor conversion project was ill conceived from the outset and had to be overhauled several times. Progress on implementing the plutonium disposition agreement in a timely manner remains elusive. And the proposed moratorium on civilian fuel processing never got off the ground. Meanwhile, the financially desperate nuclear ministry aggressively marketed its civilian nuclear technologies around the world, including to potential proliferant states such as Iran. Russian nuclear cooperation with Iran has greatly alarmed the U.S. government and seriously hampered many of the U.S. – Russian cooperative programs. Concurrently, the partial recovery of the Russian economy based mostly on the global rise of energy prices and the August 1998 devaluation of the ruble changed the economic situation in the nuclear complex for the better, giving Russia greater independence from U.S. financial support.

So, as we look back over the past decade, much has been done to help Russia deal with the clear and present danger resulting from the turmoil in its nuclear complex following the breakup of the Soviet Union. And although Russia avoided the worst during this difficult transition, the United States lost a promising opportunity to help

shape the future direction of Russia's nuclear enterprise and together with Russia to build a new era of global security. Neither side focused on the historic opportunity to jointly reduce the nuclear dangers. Before 9/11 the window of opportunity appeared to be closing, both because Russia did not need our money as desperately as before and because the security services were once again closing up the complex.

II. Post 9/11: Another chance to build a partnership.

The tragic events of 9/11 combined with President Putin's decision to ally Russia with the West in the struggle against terrorism provide another chance to build a partnership. The terrorist attacks crossed the threshold of inflicting mass casualties and underscored our vulnerability to the nexus of terrorism and mass destruction. Therefore the statement made by Presidents Bush and Putin at their Crawford Ranch meeting last November – *"Our highest priority is to keep terrorists from acquiring weapons of mass destruction"* – should form the basis of a new partnership against the threat of terrorism and proliferation of weapons of mass destruction. Because of the events of 9/11, this threat is now more urgent than that posed by the Russian nuclear complex. We should now challenge Russia to work with us side by side to tackle the most urgent international nuclear dangers. We should re-examine the highly debatable proposition that Russia is the world's greatest proliferation threat, and we should place the Russian threat, important as it is, in its proper perspective among the full spectrum of threats. Although significant differences are bound to remain in U.S. and Russian security objectives, we have much more to gain than to lose by cooperation, especially in the nuclear arena.

The events of 9/11 call for a greater sense of urgency in dealing with international nuclear security matters. For example, the fragile nature of Pakistan's government and that divided nation's strong anti-Western sentiments heighten our concerns about the security of its nuclear weapons and materials. This situation is exacerbated by the tense situation in Kashmir, and has the potential of a spillover to India and its nuclear arsenal. The renewed violence in the Middle East highlights long-standing concerns about the potential, sooner or later, for nuclear conflict in that region. It is especially important to thwart the nuclear ambitions of Iraq and Iran. The war in Afghanistan highlights the need to keep nuclear weapons and materials out of Central Asia. Fortunately, the Nunn-Lugar program facilitated the return of nuclear weapons from Kazakhstan to Russia, but dangerous weapons-usable nuclear materials remain in Kazakhstan. A renewed joint U.S. and Russian commitment to nonproliferation and export controls may also help to hold in check North Korea's nuclear ambitions and prevent other states or groups from obtaining nuclear weapons. The United States and Russia can play separate but supportive roles to effectively and quickly help enhance nuclear security around the world.

To deal with the likelihood that some weapons-usable materials are already in dangerous hands, the United States and Russia should now prepare to respond jointly to potential nuclear terrorist incidents or threats. Such preparations may include sting operations against suspected targets to recover missing materials and joint emergency response exercises spanning the gamut from disabling nuclear devices to mitigating the consequences in case of nuclear attacks. The well-intended "Atoms for Peace" program promoted nuclear research reactors in countries of the world that now do not have the

financial means or political stability to maintain and protect them. Together we should accelerate work with the International Atomic Energy Agency (IAEA) to expedite the conversion of weapons-grade fuels at all reactors and the removal of reactors from countries that are judged willing or can be persuaded to give them up.

The events of 9/11 have also brought our vulnerability to radiological terrorism into starker focus – dispersing nuclear materials (without a nuclear explosion) or sabotaging a nuclear facility. Although the consequences of a radiological act are dramatically less than a nuclear detonation, the likelihood of such an event is also much greater because of the relative ease of obtaining suitable materials – which include nuclear waste, spent fuel, and industrial and medical radiation sources. Together, our countries should lead efforts to counter radiological terrorism.

Although international vulnerabilities represent the most urgent nuclear concerns today, many of the vulnerabilities in the Russian nuclear complex resulting from the dissolution of the Soviet Union and the subsequent economic hardship remain. Therefore, it is imperative that Russia redouble her efforts to safeguard her own nuclear materials. This responsibility is an inherently governmental function of the Russian Federation. It cannot be delegated; it cannot be compromised. The United States can only offer to help, we cannot dictate; we cannot demand. We must rebuild the spirit of partnership that characterized initial cooperation. The threat of international terrorism offers another chance to rebuild this partnership because the United States and Russia have common objectives to counter this threat and both bring substantial skills to the table. Also, the activities under the new partnership should be viewed as less threatening by Russia or accusatory toward Russia and should allow us to restore good will and trust.

Such a partnership should allow the United States to restructure nuclear cooperation with Russia, putting in practice the belief that we are threatened more by Russia's weakness than her strength. We should first focus our efforts to help Russia downsize its complex and to become self sufficient in all aspects of safety and security of its complex – its nuclear weapons, its nuclear materials, and its nuclear experts. This effort should be considered a transitional phase with the objective of helping the Russian Federation develop its own modern, indigenous MPC&A system. We should not impede progress by insisting on unnecessarily intrusive physical access to sensitive Russian facilities. Instead, our support should be focused on helping the Russian Federation develop and implement its own system, while ensuring ourselves that U.S. money is spent properly and effectively.

Beyond this transitional phase, we should strive to develop an equal partnership – one without money changing hands – to jointly lead international efforts to fight terrorism and prevent the proliferation of weapons of mass destruction. Such a partnership should include a commitment to reduce all nuclear dangers worldwide while promoting the beneficial contributions of nuclear technologies. In fact, the 50th anniversary of President Eisenhower's "Atoms for Peace" initiative in December 2003 provides an opportune occasion to announce a truly new vision and new partnership that reflect the dramatically different political environment of today.

III. An outline of a U.S. – Russian partnership to fight nuclear terrorism and proliferation.

To meet the urgent concerns highlighted by the events of 9/11, we should begin immediately to build a partnership on the foundations of the Nunn-Lugar-Domenici legislation and the lab-to-lab cooperation. I briefly outline the three components of a joint U.S. – Russian initiative to fight nuclear terrorism and proliferation.

1. Rigorous security for nuclear weapons. The events of 9/11 prompted a reexamination of the security controls for nuclear weapons by each of the five nuclear weapon states. We can assume that the same occurred in India, Pakistan, and Israel. Concerns over the security of nuclear weapons and nuclear materials in these countries have been increased dramatically by the war in Afghanistan and the resulting tensions in Pakistan, the ethnic unrest and terrorist activities in India and Pakistan, and the escalating violence in the Middle East. The United States should do everything in its power to work with all of these states to prevent the loss of control of nuclear weapons and its devastating consequences.

The five nuclear weapon states could share the lessons learned from their own reexaminations of nuclear weapons security. They could share ideas and information on recommended practices and standards for nuclear weapons security. They should take additional steps if necessary to demonstrate to the world, without divulging sensitive details, that their weapons are secure. Such cooperation falls within the bounds of historical relations of the United States, Great Britain and France, and to a lesser extent Russia. During the Cold War, there was virtually no interaction with the Soviet Union on matters of nuclear weapons security, but in recent years a substantial cooperative effort has been mounted with Russia under the Nunn-Lugar program. Some preliminary work has also been started on safety and transparency. Although delicate, these efforts should all be accelerated and expanded. Cooperation and transparency should be explored, including revisiting the possibility of an agreement for cooperation that would permit limited sharing of certain kinds of classified information under carefully established rules and procedures.

Any dialog with China on nuclear weapons security would require delicate diplomacy. China adopted the old Soviet model of security, which is effective only in a tightly controlled, closed society – a model that may not work in the China of tomorrow. The initial U.S. contacts in the mid-1990s that focused on security of civilian nuclear materials were suspended late in the decade as result of the furor over potential Chinese nuclear espionage. Now, however, heightened concerns over nuclear security call for a re-evaluation of limited, focused dialog with China on nuclear security. Exchanges focusing on the security of civilian nuclear materials could be revisited before attempting to deal with defense materials or the security of nuclear weapons themselves. Such exploration must, of course, be done within the context of the larger U.S. – China security relationship.

The most striking and urgent nuclear security concern today is the security of nuclear weapons and materials in Pakistan, coupled with closely related concerns in India. The U.S. government has opened a limited dialog with both countries on these matters. For many years, any sort of cooperation with, or assistance to, the nuclear programs of Pakistan and India was out of the question, because of nonproliferation imperatives. Now, a reassessment is unavoidable. Clearly, it is in the interest of the international community that India and Pakistan implement rigorous nuclear safeguards in their nuclear weapons programs. But there is a fine line between helping them avoid disaster and tacitly appearing to approve their nuclear weapons status and programs, in effect undermining the nonproliferation regime. The U.S. government must re-examine where to draw that line. At a minimum, we must do what we can to make sure India and Pakistan each devote adequate attention to the issue and that they take a sufficiently broad, systematic approach to matters of nuclear security (both for weapons and for materials). Given that, they can probably do the job themselves. Similar dialog is necessary with all countries where this threat exists.

2. Rigorous protection, control, and accounting for all weapons-usable nuclear materials whether designated for peaceful purposes or for defense programs. To be successful in this endeavor, we must first and foremost finish the job we started with the Russian nuclear establishment to help it protect its vast storehouse of nuclear materials. I described above how these programs should be restructured to help Russia build and implement a modern, indigenous MPC&A program. One of the key components of getting the job done is the consolidation of the number of sites – addressing hundreds of tons of material, not just the few tons being addressed in the existing material consolidation and conversion effort – and a continued reduction of the total amount of material (through programs such as the HEU/LEU purchase and disposition of excess weapons plutonium).

Second, we have unfinished business in the other states of the former Soviet Union. As mentioned, the Nunn-Lugar program helped to return Soviet nuclear weapons from the newly independent states of Kazakhstan, Ukraine, and Belarus. However, weapons-usable materials remain, most of which are no longer needed for their original purpose. So, now we must tackle the more difficult job of converting or removing all unneeded weapons-usable materials from these and all other newly independent states. Until that can be accomplished, all materials must be protected by a rigorous nuclear safeguards system.

Focusing on weapons-designated materials is not sufficient. Weapons-usable uranium and plutonium are also fuel and/or byproducts of the civilian nuclear fuel cycle. Although most current commercial power reactors in the world use uranium enriched only to 3 to 4 % uranium-235 (the weapons-usable isotope), they produce plutonium that can be (and in some countries is) separated from the spent fuel. Moreover, smaller reactors such as those used for research are often fueled with uranium enriched to more than 20 % uranium-235 (the IAEA threshold for weapons-usable uranium). Commercial power reactors today enjoy a very good record of nuclear materials safeguards. This problem will become more challenging as more reactors are built around the world,

especially in some less stable nations. The IAEA plays an important international role here. With sufficient vigilance this problem can be adequately addressed even in a future with increased nuclear power.

The situation with research reactors (and other nuclear research facilities) is more problematic. The “Atoms for Peace” program encouraged the export of research reactors to all parts of the globe. In retrospect, reactors, often fueled with HEU, were in some cases located in politically unstable, technologically unprepared, and economically disadvantaged countries (currently 43 countries, including Uzbekistan, Ghana, and Algeria, for example). The IAEA and the U.S. government have encouraged the conversion of research reactors from HEU to LEU (an agreement was recently reached with Uzbekistan, for example). However, the current effort is insufficient in light of the concerns raised by the events of 9/11. A large number of these reactors (many of which are no longer operable) should be shut down, decommissioned and the nuclear materials withdrawn completely. A significant number of reactors or nuclear research facilities are located in the states of the former Soviet bloc; states that can no longer afford them or adequately provide for their security. Solutions to these problems are urgently needed and will require an expensive effort and difficult choices. Among the major challenges is dealing with the spent fuel and radioactive waste. Solving these problems will require strong leadership from the United States, Russia and other reactor-exporting countries working closely with the IAEA.

The IAEA should have a major role in the effort to enhance the security of nuclear materials in civilian applications worldwide. The Nuclear Threat Initiative has pointed the way, through its monetary contribution announced in Vienna in October 2001. The U.S. government pledged a matching contribution in November when Energy Secretary Abraham addressed the IAEA Board of Governors, and other countries have followed suit. But a great deal of heavy lifting will be necessary to translate these initial steps into a meaningful action-oriented program on the worldwide scale that is needed. Congress will need to take strong action. And the Executive Branch must follow through with major bilateral and multilateral efforts to enlist the strong support of other countries. In parallel, the United States and Russia could lead a campaign to down-blend all of the world’s HEU not required for legitimate purposes to less than 20 %, thereby eliminating its proliferation danger. There is much less need for HEU today than was envisaged in the early days of nuclear power.

3. Expand security measures to radioactive materials for radiological terrorism. Radiological dispersal devices (often referred to as “dirty” bombs) that spread radioactive materials without a nuclear detonation are weapons of mass disruption rather than weapons of mass destruction. The disruption resulting from the 9/11 attacks had a devastating ripple effect, both economically and psychologically, across the entire nation. Had the attack also involved the dispersal of dangerous amounts of radioactive material in a populated area, the resulting disruption would have been significantly greater. We must improve our efforts to avoid and respond to radiological terrorism.

The source materials for radiological terrorism are highly diverse and relatively accessible, much more accessible than weapons-usable nuclear materials. Materials for radiological devices include all radioactive materials of the nuclear fuel cycle (both civilian and military) as well as radiation sources used in medical and industrial applications. They vary enormously in their radiotoxicity and their lethality. Moreover, radioactive materials from the nuclear fuel cycle (including fresh fuel, spent fuel, and nuclear waste) are present in dozens of nations, and radiation sources are present in most nations of the world. If and when Al Qaida or other terrorist organizations decide to use radiological weapons, there is little doubt – under current conditions – that they will be able to obtain them. In addition, sabotage of nuclear reactors or other fuel-cycle facilities poses a serious potential threat.

Securing radioactive materials that constitute a radiological threat presents an enormous challenge. Even in the United States, where extensive government regulations control the handling and transportation of radioactive materials, the security of such materials, in light of new, post 9/11 concerns, needs more attention. For example, as of 2001, close to 5,000 orphaned radiation sources (sources without a current owner) were identified in the United States. Prior to 9/11, the orphan source problem was recognized and the steps and the resources required to solve the problem were well understood, but there was no sense of urgency. Post 9/11, there is little excuse for delay.

Annually, more than 200 radiation sources are reported stolen, lost, or unaccounted for in the United States alone. Internationally, 110 countries do not even have adequate regulations controlling such materials. We must challenge our experts now to devise a way to deal with this problem internationally. We should explore establishing an aggressive international orphan source program. In some countries or for new problems, we may want to focus on information exchange and sharing best practices and standards. Also, we must strengthen our capability to respond to acts of radiological terrorism, if and when they occur. Effective response can greatly reduce the harm from a radiological event. One of the most important aspects of homeland security against radiological threats will be to inform the public concerning the real hazards before an incident occurs. If one can clearly communicate the fact that radiological weapons are not weapons of mass destruction, then we may be able to avoid mass disruption.

A high priority radiological security initiative should include both a domestic and an international component. The domestic part would necessarily involve the various agencies with responsibilities and expertise in this area, under the coordination of Governor Ridge's office. The international component should build on the capabilities and experience of the IAEA, which has already assembled the basic building blocks of a comprehensive international program. However, Congress and the Executive Branch must act aggressively, through bilateral as well as multilateral channels, to enlist strong international support and commitment.

Mr. Chairman, I want to close my remarks by restating my three main themes. 1) We are fortunate that a major disaster in the Russian nuclear complex has been avoided in the 10 years since the dissolution of the Soviet Union. However, risk and vulnerability

of the Russian nuclear complex remains high because we lost a grand opportunity to help Russia build its own, sustainable nuclear safeguards system and to develop a partnership for greater global security. 2) Post 9/11, we have another opportunity to rebuild the partnership by focusing on the fight against international terrorism and proliferation of weapons of mass destruction. 3) I briefly outlined the three elements of a program to meet the urgent concerns of today and I described the opportunity that we have to build a better, more strategic partnership with Russia in the spirit of revisiting the “Atoms for Peace” initiative at its 50th anniversary next year.

Thank you Mr. Chairman for giving me the opportunity to share my views on these important issues.